RISOGRAPH

TECHNICAL INFORMATION

TO:	Dealer Technical Department	Page 1/12
FROM:	RISO, Inc. Technical Department	Dated 4/22/88
SUBJECT:	3500 Image Scanner IT I/O PCB(A) Adjustments	Issue# T-20

RISOGRAPH 3500

Attached is a temporary adjustment manual for the 3500 Image Scanner and the IT I/O PCB(A).

NOTE:

- The RISOGRAPH 2700 and 3500 models are similar in design. The distinguishing differences are in the image scanner and the image process. Therefore, the 2700 technical manual and the attached adjustment sheets can be used to adjust the 3500.

- Please familiarize yourself with the operation of the 3500 and the attached adjustments.

- The formal, 3500 technical manual, will be an extension of the 2700 manual, and will be issued at a later date.

Sincerely,

Rick Church
Technical Manager

IMAGE SCANNER VIDEO SIGNAL

The CCDS in the Image Scanner are divided into 5 blocks. The individual sensitivity of each block can be adjusted by its corresponding VR. The black level voltage and the overall gain voltage of the complete video signal is also adjustable by VR6 and VR7 (see figure 1).

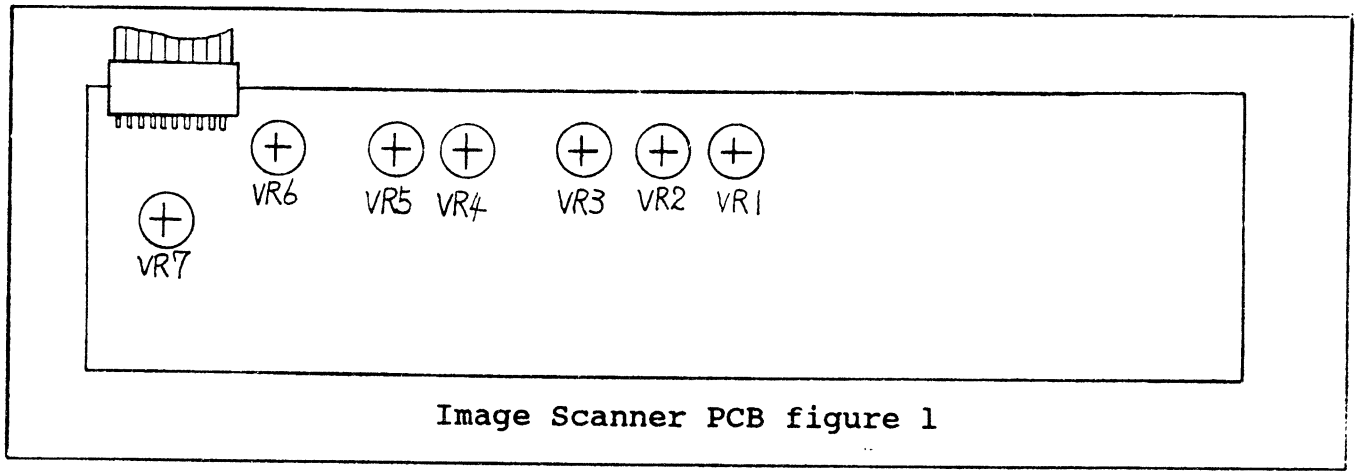


Image Scanner PCB figure 1

VR 1 = A

VR 2 = B

VR 3 = C

VR 4 = D

VR 5 = E

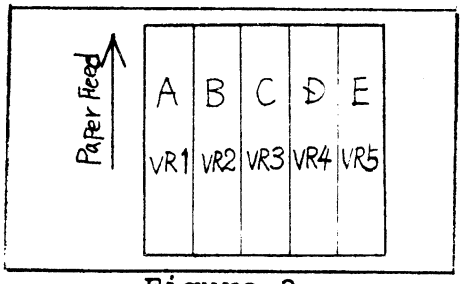


Figure 2
Printed Copy

Test Copy Settings (used to determine if adjustments are necessary)

1) Set the original select to the photo mode.

2) Set the master-making density dial on the sub-panel to center position.

3) Use test chart No. 10 as original, set the machine speed to No. 4 and make a test copy.

* Visually check the printed sheet, if there is a difference among the individual blocks on the printed copy, proceed with the following adjustment.

Adjustment procedures for the video signal on Image Scanner PCB

1. **VR1-VR5 video signal block gain adjustment**

Note: The following adjustments can be accomplished with the use of an oscilloscope connected to test points TP 10 and TP1 ground on the IT I/O PCB (A). However; if the use of an oscilloscope is not available you can use test chart No. 10 to adjust.

1) Remove upper cover from master making unit and by pass safety switch.

2) Remove the image scanner PCB cover.

3) Place a carrier sheet upside down (or pure white sheet of paper) under the image scanner during steps 4-6.

4) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 4 and place it on pins 3 this will light up the led array (see figure 3).

J1

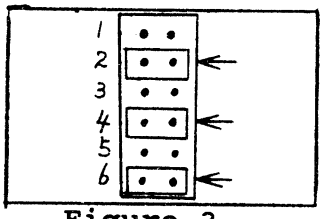


Figure 3

1. For factory adjustment
2. Normal Position
3. For lighting led array of image scanner
4. Normal position
5. For shading compensation
6. Normal position

5) The sensitivity of each block can now be adjusted by VR1-VR5 on the image scanner PCB for an approximate 2.7 volt level. (See figure 4).

* Turning VR clockwise increases sensitivity voltage.

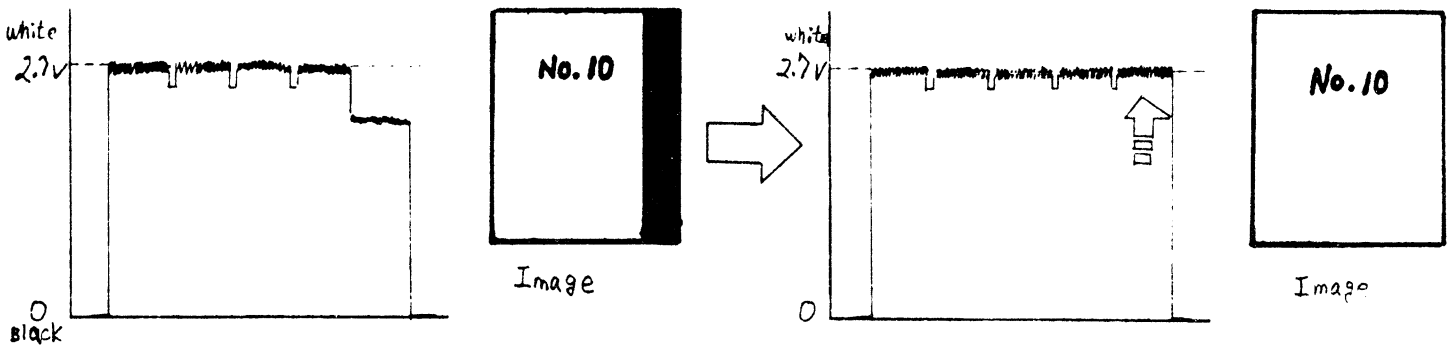
6) After adjusting single or multiple VR =, locate J1 on the IT I/O PCB (A) and remove jumper on pins 6 and place it on pins 5 and then back to pins 6. Do not move image scanner or machine for 30 seconds. This step will reset shading compensation.

7) Remove the carrier sheet and replace the jumper in J1 (that lights the led array) to the normal position.

* Make a test copy with test chart No. 10, to test results.

Repeat adjustment procedures 3)-6) if necessary.

Example Figure 4



Before After

Note: The following adjustments can be accomplished with the use of an oscilloscope or a volt meter.

2. VR6 - VIDEO SIGNAL BLACK LEVEL ADJUSTMENT

1) Remove upper cover of the master making unit and by pass safety switch.

2) Place a solid black original under the image scanner.

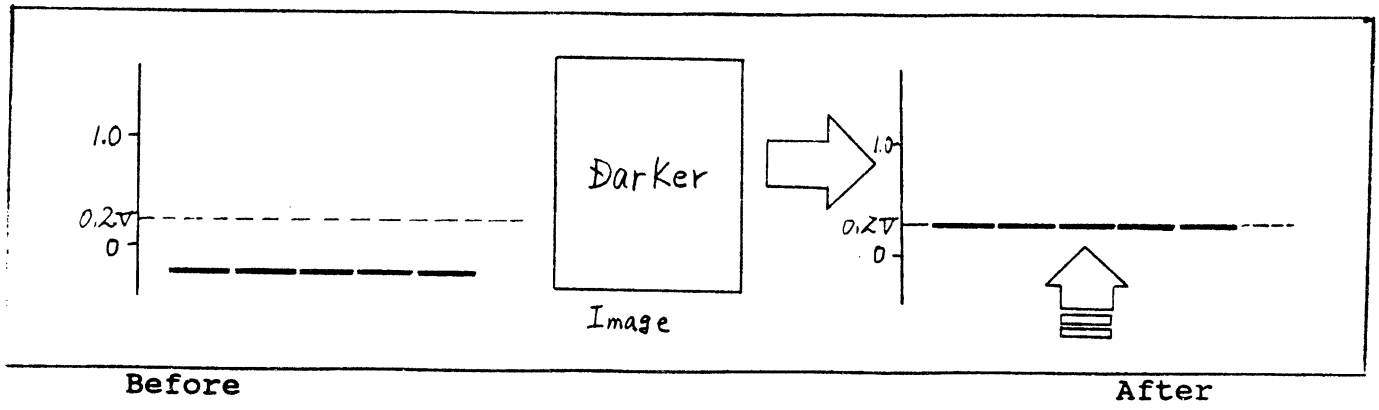
3) Connect a volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP10 (-) to TP1.

4) Turn power switch on and check voltage reading for approximately 0.2 volts. If incorrect, adjust VR6 on image scanner PCB for correct value. (see figure 5)

5) After adjustment place a carrier sheet upside down (or a pure white sheet of paper) under the image scanner.

6) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 6 and place it on pins 5 and then back to pins 6. Do not move image scanner or the machine for 30 seconds. This step will reset shading compensation.

Example Figure 5



3. **VR7 - VIDEO SIGNAL OVERALL GAIN ADJUSTMENT**

1) Remove upper cover of the master making unit and by pass safety switch.

2) Place a carrier sheet upside down (or pure white sheet of paper) under the image scanner.

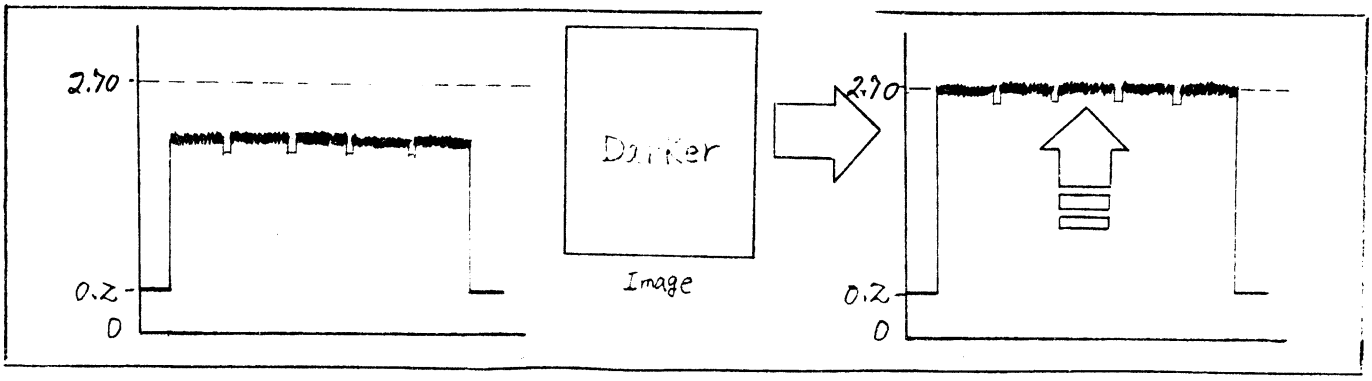
3) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 4 and place it on pins 3. This will light up the led array.

4) Connect a volt meter or an oscillosope to the IT I/O PCB (A) (+) to TP10 (-) to TP1.

5) Turn power switch on and check voltage reading for approximately 2.70 volts. If incorrect, adjust VR7 on the image scanner PCB for correct value. (See figure 6).

6) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 6 and place it on pins 5 and then back to pins 6. Do not move image scanner or the machine for 30 seconds. This step will reset shading compensation.

Example Figure 6



IT I/O PCBS IMAGE SIGNAL

The Image Scanner CCDS produces a video signal to the IT I/O PCBS. This video signal is transformed into an Image Signal by the IT I/O PCBS. (See figure 1)

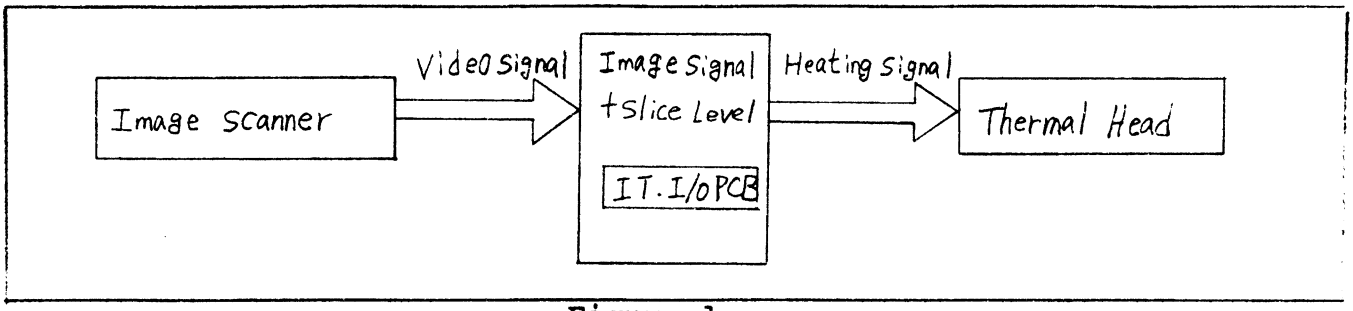


Figure 1

Adjustment procedures for the image signal on the IT I/O PCBS

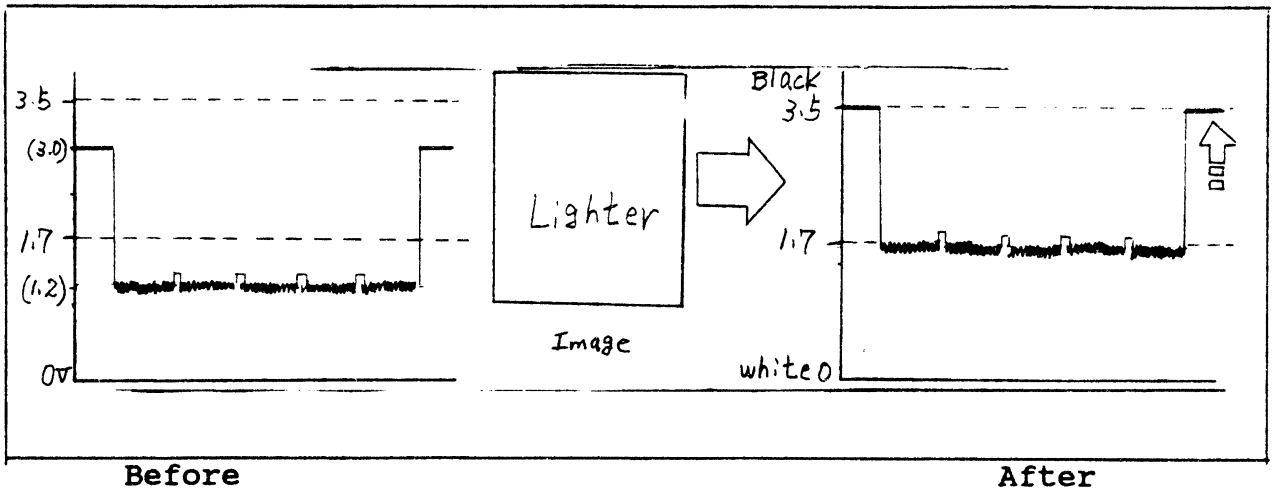
Note: The following adjustments must be made with the master-making density dial (on the sub panel) at the center, and Original Select button to the photo mode.

1. VR8 IMAGE SIGNAL BLACK LEVEL ADJUSTMENT

1. Remove upper cover of the master making unit and by pass safety switch.
2. Place a solid black original under the image scanner.
3. Connect a volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP7 (-) to TP1.
4. Turn power switch on and check voltage reading for approximately 3.5 volts. If incorrect adjust VR8 on the IT I/O PCB (A) for correct value. (See figure 2)
5. After adjustment place a carrier sheet upside down (or a pure white sheet of paper) under the image scanner.
6. Locate J1 on the IT I/O PCB (A) and remove jumper on pins 6 and place it on pins 5 and then back to pins 6. Do not move image scanner or the machine for 30 seconds. This step will reset shading compensation.

Important: VR8 works in conjunction with the master-making density dial, located on the sub panel. The dial must be in the center position. If it is not in the center position the voltage values will be incorrect.

Example Figure 2



2. **VR7 - IMAGE SIGNAL GAIN ADJUSTMENT**

1) Remove upper cover of the master making unit and by pass safety switch.

2) Place a carrier sheet upside down (or pure white sheet of paper) under the image scanner.

3) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 4 and place it on pins 3. This will light up the led array.

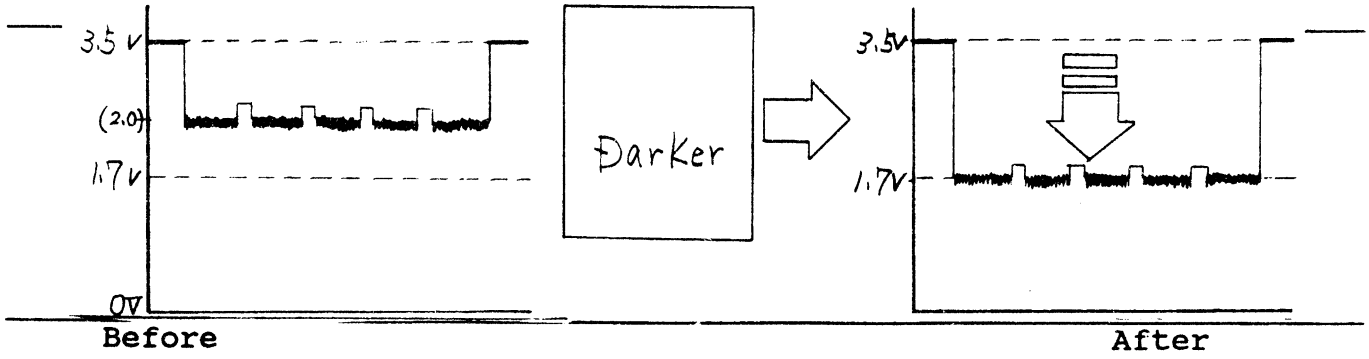
4) Connect a volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP7 (-) to TP1.

5) Turn power switch on and check voltage reading for 1.7 volts. If incorrect adjust VR7 on the IT I/O PCB (A) (see figure 3).

6) Locate J1 on the IT I/O PCB (A) and remove jumper on pins 6 and place it on pins 5 and then back to pins 6. Do not move the image scanner or the machine for 30 seconds. This step will reset shading compensation.

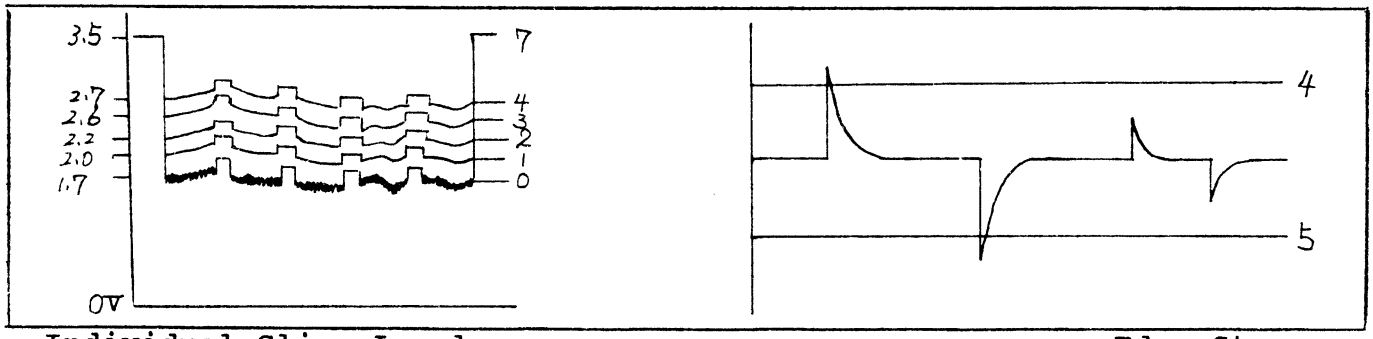
Important: If the voltage value is set below 1.5 volts, correct shading compensation cannot take place. The value must be set to 1.7 volts.

Example Figure 3



IT I/O PCB (A) Image Signal Slice Levels

The image signal has six different slice level adjustments. Each slice level is used to judge the image signal during image processing. (see figure 1).



0. Gain voltage of image signal 1.7v
1. White peak slice level 2.0v
2. White level slice level 2.2v
3. Line mode slice level - 2.6
4. Character recognition slice level 2.7v
5. Edge stress upper slice level No. voltage value
6. Edge stress lower slice level No. voltage value
   Black level image signal 3.5v

Adjustment Procedures of Slice Levels

1. WHITE PEAK SLICE LEVEL ADJUSTMENT

This slice level is the dither matrix basic level, and is used to judge the image signal density.

1. Turn the power switch on and set the master-making density dial (on the sub panel) at the center position.
2. Set the original-select to the photo mode.
3. Connect volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP3 (-) to TP1.
4. Check voltage reading for 2.0 volts. If incorrect adjust VR4 on the IT I/O PCB (A).

2. WHITE LEVEL SLICE LEVEL ADJUSTMENT AND CHARACTER RECOGNITION SLICE LEVEL ADJUSTMENTS

These two slice levels work together to judge the image signal as a dither matrix image process (photo) or a character image when using the photo mode.

1. Turn on the power switch and set the master-making density dial (on the sub panel) at the center position.
2. Set the original select to the photo mode.
3. Connect volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP6 (-) to TP1.
4. Check voltage reading for 2.2 volts. If incorrect adjust VR3 on the IT I/O PCB (A).
5. Connect volt meter on an oscilloscope to the IT I/O PCB (A) (+) to TP5 (-) to TP1.
6. Check voltage reading for 2.7 volts. If incorrect adjust VR2 on the IT I/O PCB (A).

3. EDGE STRESS SLICE LEVEL UPPER AND LOWER ADJUSTMENT

The edge stress slice levels (upper and lower) follow the image signal during processing to identify a character or an image. The slice level margin (upper and lower) can be set so that if the image signal goes above or below the margins a sharper image will appear when identified.

1. Turning VR5 on the IT I/O PCB (A) clockwise will narrow the margins.

Attention: If it is too narrow, image definition will have too many dots or too strong of an edge line.

2. Turning VR5 counter clockwise will increase the width of the margins.

Attention: If too wide, the image or the character will appear fuzzy. (See figure 2)

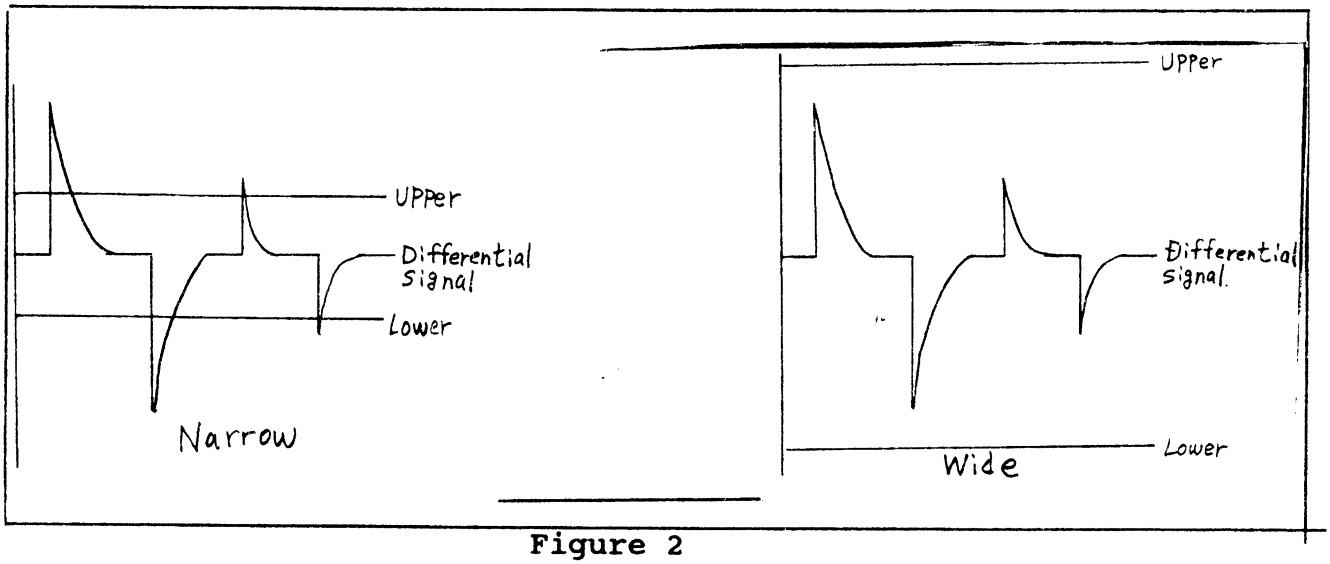


Figure 2

4. **LINE MODE SLICE LEVEL ADJUSTMENT**

This slice level is used to judge if the image is white or black.

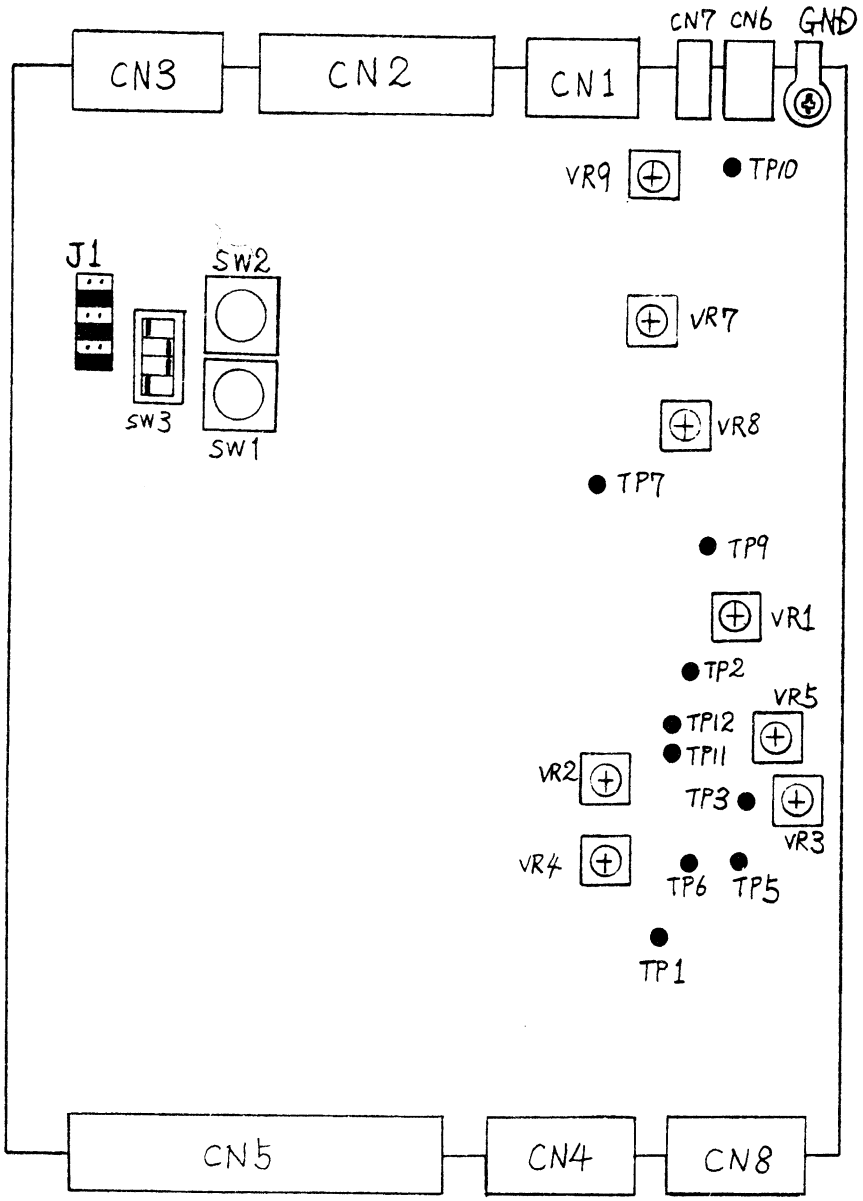
1. Turn the power switch on and set the master-making density dial on the sub panel at the center position.

2. Set the original select to the line mode.

3. Connect a volt meter or an oscilloscope to the IT I/O PCB (A) (+) to TP2 (-) to TP1.

4. Check voltage reading for 2.6 volts. If incorrect adjust VR1 on the IT I/O PCB (A).

IT I/O PCB (A)



* (TP Test Pin)

1. Ground
2. Line (character) mode slice level
3. White peak slice level
5. Photo mode character recognition
6. White level slice level
7. Image signal
9. Edge stress differential wave
10. CCD video signal
11. Edge stress slice level upper
12. Edge stress slice level lower

The Reference Chart for Setting the Pulses of Thermal Power (For RISOGRAPH <P> MASTER)

The Value of Resistance (Ω)	1st Pulse	2nd Pulse
1600 ~ 1607	01A	015
1608 ~ 1629	01B	015
1630 ~ 1667	01B	016
1668 ~ 1705	01C	016
1706 ~ 1728	01C	017
1729 ~ 1781	01D	017
1782 ~ 1789	01D	018
1790 ~ 1850	01E	018
1851 ~ 1856	01F	018
1857 ~ 1910	01F	019
1911 ~ 1932	100	019
1933 ~ 1971	100	01A
1972 ~ 2008	101	01A
2009 ~ 2032	101	01B
2033 ~ 2084	102	01B
2085 ~ 2093	102	01C
2094 ~ 2153	103	01C
2154 ~ 2160	104	01C
2161 ~ 2214	104	01D
2215 ~ 2236	105	01D
2237 ~ 2275	105	01E
2276 ~ 2312	106	01E
2313 ~ 2336	106	01F
2337 ~ 2388	107	01F
2389 ~ 2396	107	100
2397 ~ 2457	108	100

ATTACHMENT: 1

SUBJECT: Adjustment of Image Scanner CCD;-257

FUNCTIONS OF VR'S ON IMAGE SCANNER

VR 1 TO VR 4: Have the same function as VR1-VR4 on glass type image scanner.

* Used to adjust white level or gain in individual blocks. Use test chart No. 10 for adjustment, turning VR clockwise: causes lighter printing within the individual block.

VR 5 TO VR 8: Used to adjust individual black level or basic voltage 0 volts in individual blocks. Turning VR clockwise: causes lighter printing within the individual block.

ATTENTION VR 5 to VR 8 have been set at factory for 0 volts. Normally they do not require adjustment. However; if adjustment is necessary, please use oscilloscope to insure proper 0 volt setting. Oscilloscope testing - see IT I/O PCB connection instructions.

VR 9: Has the same function as VR6 on glass type image scanner. (overall 3 volts level).

* Used to adjust white level or gain for whole line of CCD'S to maintain 3 volts, please check with oscilloscope.
(If the level is set low, image will be darker).
(If the level is set high, image will be lighter).
Turning VR clockwise causes lighter image.

* PLEASE SEE ATTACHMENT 2 OSCILLOSCOPE TEST
BLACK LEVEL 0 VOLT TEST
WHITE LEVEL (GAIN VOLTAGE) 3VOLT TEST

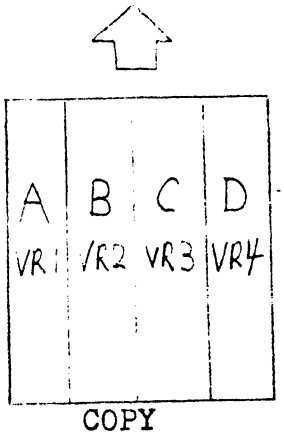
VR10: Has the same function as VR 7 on glass type image scanner.
Used to adjust the luminosity of LED arrays.

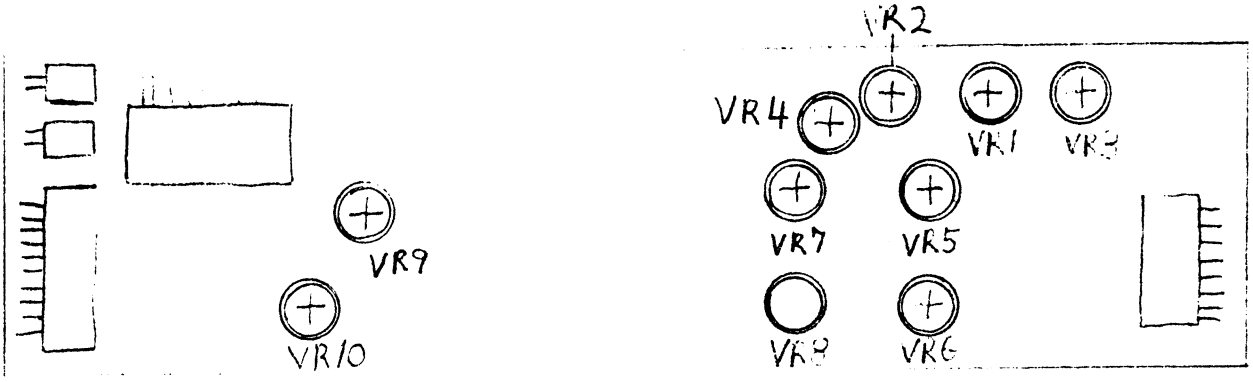
ATTENTION: VR10 should not be adjusted unless an oscilloscope is used. (See IT I/0 PCB connection instructions for oscilloscope testing).
This adjustment will only be necessary when VR9 adjustment is not obtainable and is usually preformed as image scanner ages and LED brightness starts to weaken.

VR 1-4 EACH BLOCK GAIN VOLTAGE
WHITE LEVEL

VR 9 WHOLE AREA GAIN VOLTAGE
WHITE LEVEL

3 VOLTS





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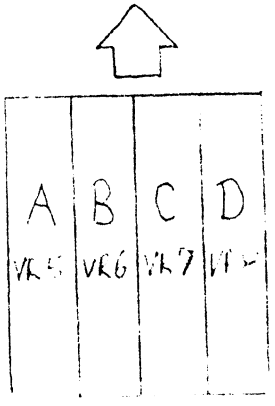
VR 5-8 EACH BLOCK BLACK LEVEL
0 VOLTS

NOTE: DO NOT ADJUST VR10 WITHOUT THE USE OF AN OSCILLOSCOPE.